General Description

The WSD3056DN is the highest performance trench Dual N-Ch MOSFET with extreme high cell density,which provide excellent R_{DSON} and gate charge for most of the synchronous buck converter applications .

The WSD3056DN meet the RoHS and Green Product requirement 100% EAS guaranteed with full function reliability approved.

Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% EAS Guaranteed
- Green Device Available

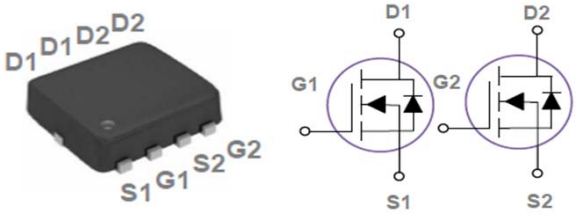
Product Summery

B_{VDSS}	R_{DSON}	I_D
30V	13mΩ	35A

Applications

- POL Applications
- MB / VGA / Vcore
- Load Switch
- SMPS 2nd SR

DFN3X3 Dual Pin Configuration



Absolute Maximum Ratings @TA=25℃ unless otherwise noted

Symbol	Parameter		Rating	Units
V_{DS}	Drain-Source Voltage		30	V
V_{GS}	Gate-Source Voltage		±20	V
I_D	Drain Current (Continuous) *AC	T_C=25°C	35	A
		T_C=100°C	22	
I_{DM}	Drain Current (Pulse) *B		140	A
P_D	Power Dissipation	T_C=25°C	27	W
EAS	Single Pulse Avalanche Energy		13	mJ
RθJA	Thermal Resistance Junction to ambient		62	℃/W
$R_{\theta JC}$	Thermal Resistance Junction to Case		4.6	℃/W
T_J//T_{STG}	Operating Temperature/ Storage Temperature		-55~150	℃

Electrical Characteristics @T_A=25℃ unless otherwise noted

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	30			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 30 V, V_{GS} = 0V			1	μA
I_{GSS}	Gate Leakage Current	V_{GS} = ±20V, V_{DS} = 0V			100	nA
On Characteristics						
$V_{GS(TH)}$	Gate Threshold Voltage	V_{GS} = V_{DS}, I_{DS} = 250μA	1.0	1.8	2.5	V
$R_{DS(on)}$	Drain-Source On-state Resistance	V_{GS} = 10V, I_D = 10A		10	13	mΩ
		V_{GS} = 4.5V, I_D = 8A		14	18	mΩ
gFS	Forward Transconductance	V_{DS} = 5V, I_D= 5A		6		S
Switching						
Qg	Total Gate Charge	V_{GS}=10V, V_{DS}=15V, I_D=5A		7.2		nC
Qgs	Gate-Source Charge			2.3		nC
Qgd	Gate-Drain Charge			3		nC
td (on)	Turn-on Delay Time	V_{GS}=10V, V_{DD}=15V, I_D=1A,R_G=6Ω		3.8		ns
tr	Turn-on Rise Time			10		ns
td(off)	Turn-off Delay Time			22		ns
tf	Turn-off Fall Time			6.6		ns
Rg	Gate resistance	V_{GS}=0V, V_{DS}=0V, f=1MHz		2.8		Ω
Dynamic						
Ciss	Input Capacitance	V_{GS}=0V, V_{DS}=15V, f=1MHz		620		pF
Coss	Output Capacitance			85		pF
Crss	Reverse Transfer Capacitance			30		pF
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Continuous Source Current	V_G=V_D=0V , Force Current			35	A
I_{SM}	Pulsed Source Current3				70	A
V_{SD}	Diode Forward Voltage	I_{SD} = 1A , V_{GS}=0V			1.2	V

Note :

1，Repetitive Rating : Pulsed width limited by maximum junction temperature.

2，VDD=25V,VGS=10V,L=0.1mH,IAS=16A.,RG=25 ,Starting TJ=25℃.

3，The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%.

4，Essentially independent of operating temperature.

Typical Characteristics

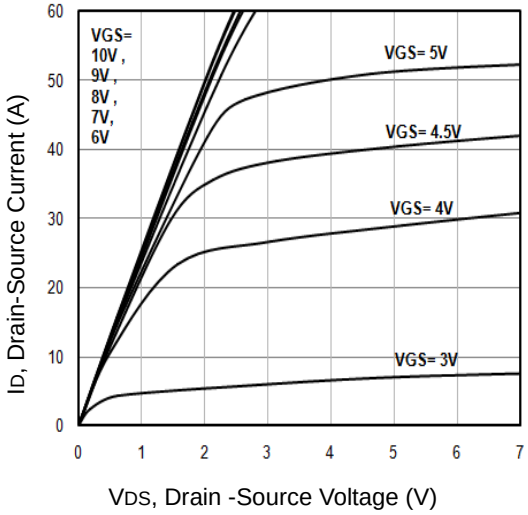


Fig1. Typical Output Characteristics

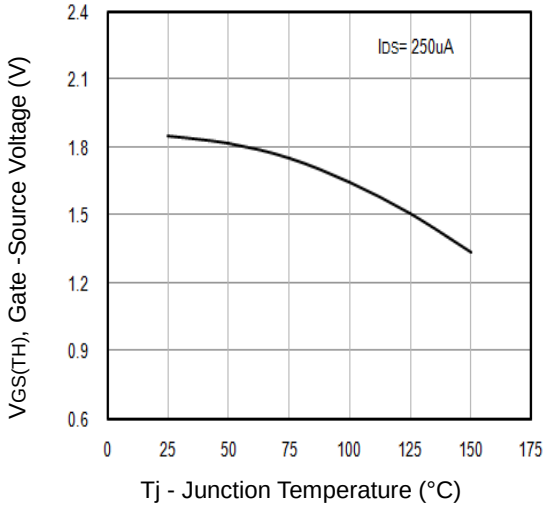


Fig2. Threshold Voltage Vs. Temperature

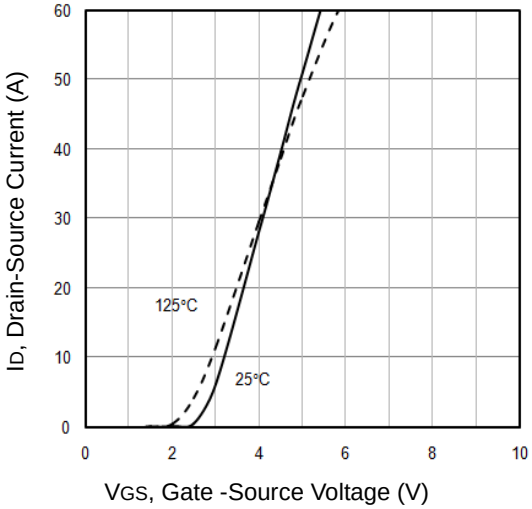


Fig3. Typical Transfer Characteristics

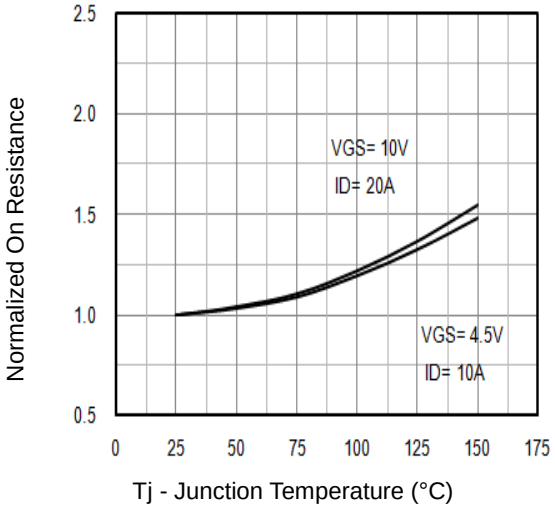


Fig4. Normalized On-Resistance Vs. Temperature

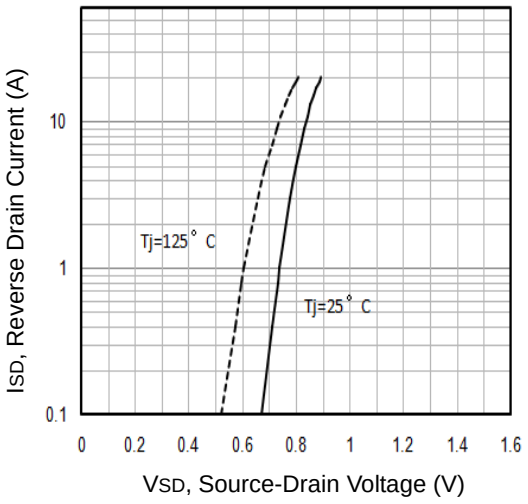


Fig5. Typical Source-Drain Diode Forward Voltage

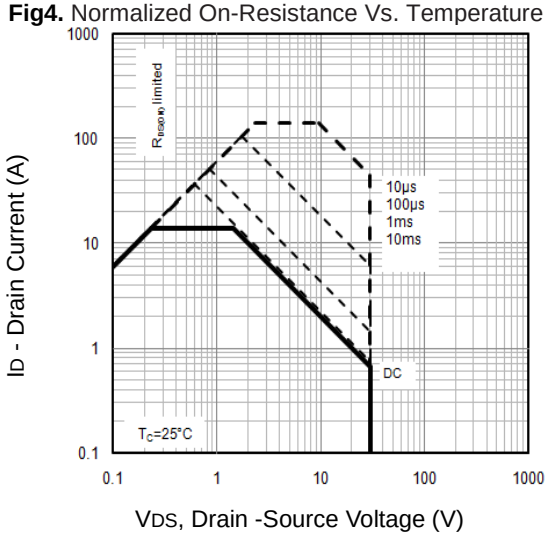


Fig6. Maximum Safe Operating Area

Typical Characteristics

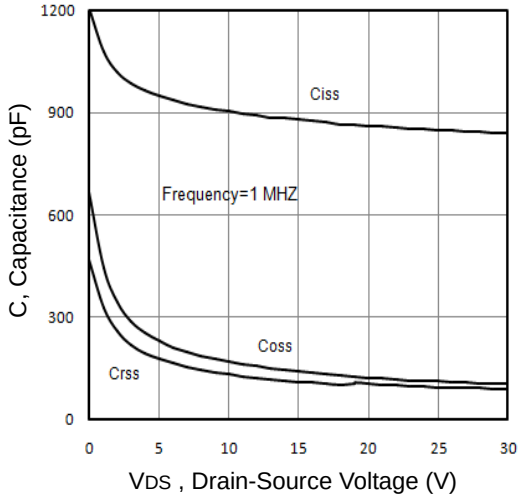


Fig7. Typical Capacitance Vs.Drain-Source Voltage

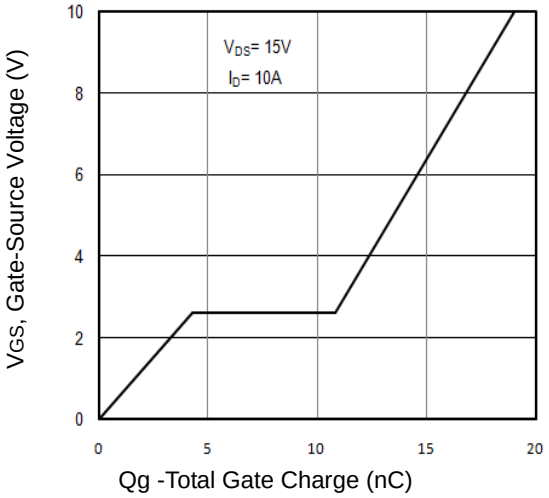


Fig8. Typical Gate Charge Vs.Gate-Source Voltage

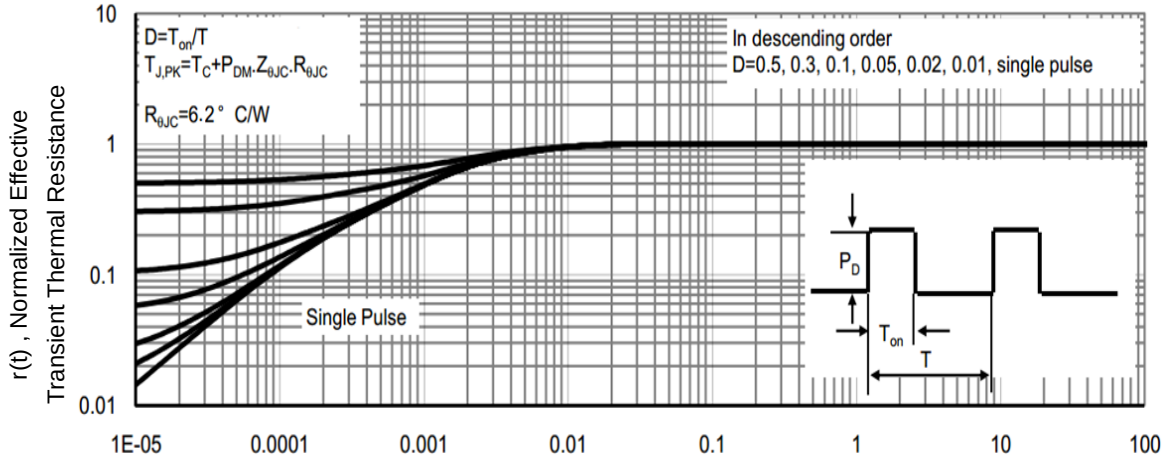


Fig9. T1 ,Transient Thermal Response Curve

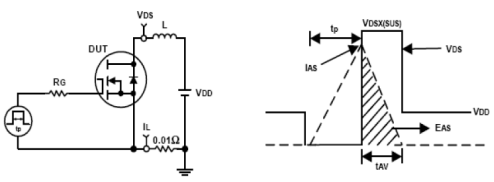


Fig10. Unclamped Inductive Test Circuit and waveforms

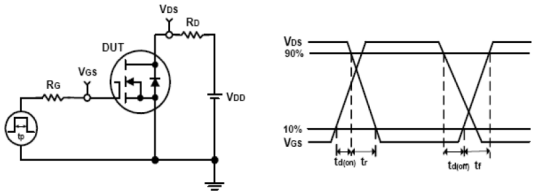
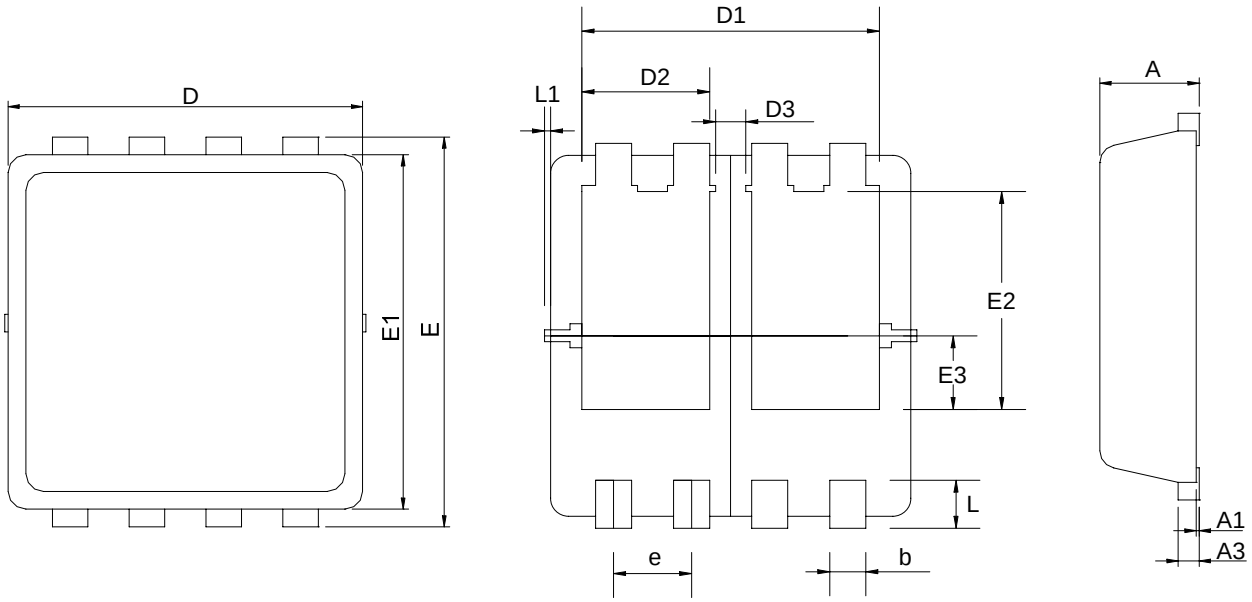


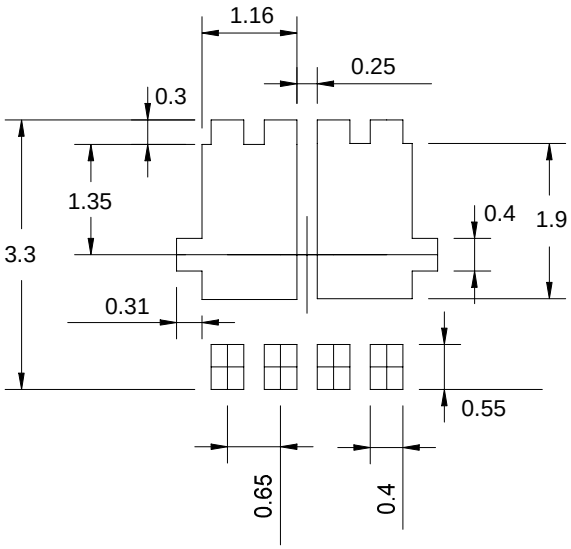
Fig11. Switching Time Test Circuit and waveforms

DFN3x3B-8_EP2



SYMBOL	DFN3x3-8_EP2			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.70	0.90	0.028	0.035
A1	0.00	0.05	0.000	0.002
A3	0.10	0.25	0.004	0.010
b	0.24	0.35	0.009	0.014
D	2.90	3.10	0.114	0.122
D1	2.375	2.575	0.094	0.101
D2	0.963	1.163	0.038	0.046
D3	0.175	0.275	0.007	0.011
E	3.10	3.30	0.122	0.130
E1	2.90	3.10	0.114	0.122
E2	1.713	1.913	0.067	0.075
E3	0.425	0.625	0.017	0.025
e	0.65 BSC		0.026 BSC	
L	0.30	0.50	0.012	0.020
L1	0.000	0.100	0.000	0.004

RECOMMENDED LAND PATTERN



UNIT: mm

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